

# Space News Roundup

Vol. 32

June 21, 1993

No. 24

## Endeavour, crew ready to launch STS-57 Sunday

By James Hartsfield

All preparations were on schedule late last week for the launch of *Endeavour* at 8:37 a.m. central on Sunday, and weather forecasters predicted in a long-range forecast that there was a 100 percent chance Mother Nature would cooperate with STS-57.

The countdown for *Endeavour* began at 1:30 a.m. Thursday and the STS-57 crew—Commander Ron Grabe, Pilot Brian Duffy, Payload Commander David Low and Mission Specialists Nancy S. Sherlock, Jeff Wisoff and Janice Voss—left

for KSC midday Thursday.

On STS-57 *Endeavour* will retrieve the European Retrievable Carrier satellite, which was deployed from *Atlantis* on STS-41 in July 1992. EURECA and its complement of long-term experiments will be brought back and turned over to their European Space Agency science investigators.

With an on-time launch, a four-day series of maneuvers by *Endeavour* will culminate in Low's capturing EURECA with *Endeavour's* mechanical arm at about 10:12 a.m. Wednesday.

Also, making its first shuttle flight aboard *Endeavour* will be the Spacehab module, a commercially developed pressurized module that is smaller than the Spacelab but expands the room available for experiments on the shuttle's lower deck. In the Spacehab, 18 experiments will be tended mainly by Voss and Sherlock, including five JSC experiments—soldering in space and electrical repair evaluations to be performed by Duffy; a cell culture experiment; a radiation study; a study of human factors; and a study of posture in weightlessness.

On the fifth day of the flight, starting at about 8:37 a.m. central on Thursday, if *Endeavour* launches on time, Low and Wisoff will perform the second in a series of test spacewalks. The first such EVA was done on STS-54 in January.

The five-hour spacewalk will evaluate spacewalk training methods, astronauts' mobility during EVAs, handling of large objects while on the end of the mechanical arm, and various working methods in space. The spacewalk would conclude at about 12:37 p.m. Thursday.

*Endeavour* also will carry several

secondary experiments, including the Superfluid Helium On-Orbit Transfer investigation in the cargo bay, a study of possibly refilling astronomical satellites with super cold helium in orbit that is required by their instruments; the Shuttle Amateur Radio Experiment, a ham radio onboard via which ham operators and various school students worldwide can talk to the crew; the Consortium for Materials Development in Space Complex Autonomous Payload-IV, an investigation of growing organic crystals in

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## Saturn limit now 35 mph

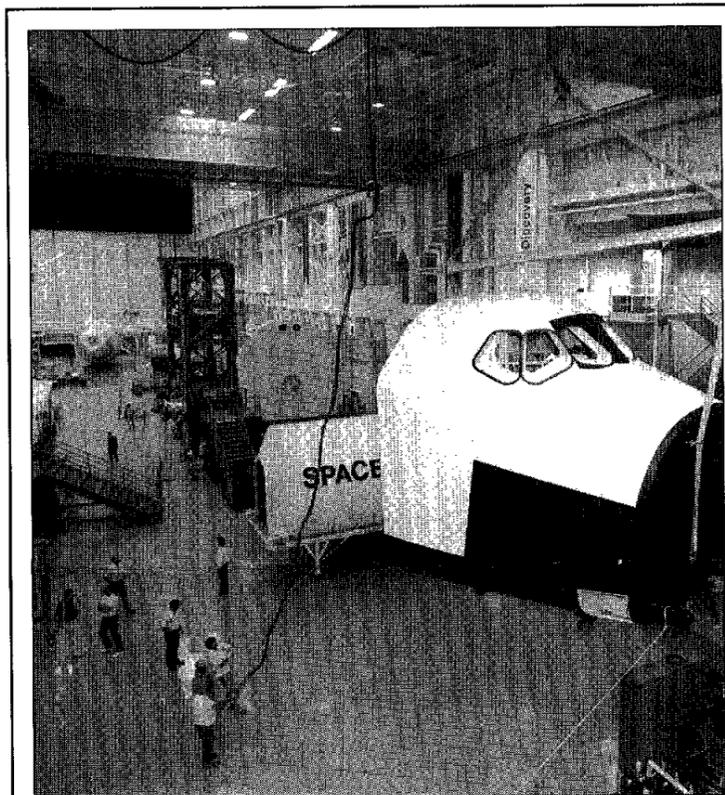
Red and blue flashing lights are becoming a familiar sight in the rear view mirrors of drivers on the new Saturn Lane as motorists adjust to a new speed limit on the new public thoroughfare.

When the street was on JSC's private property, the center set the speed limit. Saturn Lane is now, however, the responsibility of the City of Houston and the city has set the speed limit at 35 miles per hour.

"People travel Saturn so often, they just don't see the signs," said Capt. Kevin Graves of Harris County's Precinct 8 Constable's Office. "There is a high level of complacency with driving that road."

Signs with the new limit have been posted in both directions, Graves said. Still drivers are clocked regularly driving more than 60 mph and as high as 73 mph.

The JSC Security officials also remind motorists that passing through the gates of the center does not free them from responding to city and county law enforcement officials' requests to pull over. Security officers will allow the law enforcement officers to pass onto the center.



**NEW TRAINER**—A new Crew Compartment Trainer joined the fleet in Bldg. 9 this month. The new trainer will be used in addition to the older mockup for astronaut training and can be positioned in different attitudes for various egress training exercises. Phase one training in the mockup is expected to start this Fall.

## JSC patent holders honored for inventions

JSC inventors continue to step up to the challenge of identifying dual-use technologies. That trend was highlighted recently at the JSC Inventors lunch where 16 patent holders were recognized.

Patents and other intellectual properties play a critical role in the commercialization of new technology, JSC Patent Counsel Ed Fein said at the luncheon.

"Before we can attract commercial partners willing to invest substantial venture capital in our technologies, we have to be in a position to have something of real value to bring to the table," he said.

Patents placed in the public domain often remain dormant, but when a governmental agency, such as NASA, can offer an exclusive license to an investor, the patent takes on a true value, he said. Without the protection offered by a patent, companies are less inclined to make a big investment.

"When I was a young patent examiner in the patent office in the mid '60s, I was confronted daily with a rather profound statement of Abraham Lincoln," Fein said. "It was boldly carved in stone over a door-

way of the Commerce Building. Lincoln said 'The patent system added the fuel of interest to the fire of genius.'

"JSC patents are the fuel of interest to our technology. It's the best way we have of enhancing the commercial potential of our emerging technologies and to establish the appropriate patent positions in them."

Fein also said if the country wants to remain competitive, inventors are going to have to do a better job of taking technology out of the lab and to industry.

At the luncheon, David A. Wolf and Thomas J. Goodwin were honored as JSC's 1992 Inventors of the Year for Patent No. 5153132, the Three-Dimensional Co-Culture Process. Wolf, who was JSC and NASA's Inventor of the Year in 1991, also received patents last year for the Method of Culturing Mammalian Cells in a Horizontally Rotated Bioreactor, the Three-Dimensional Cell to Tissue Assembly Process, the Method for Culturing Mammalian Cells in a Perfused Bioreactor and the High Aspect Reactor Vessel and Method of Use. The last patent is held jointly

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## NASA mourns the loss of Slayton, 'a true national hero'

Donald K. "Deke" Slayton, 69, one of the United States' original seven astronauts selected by NASA for the Mercury Program in 1959, died June 13, of complications of a brain tumor.

Memorial services were conducted Saturday at JSC for Slayton who flew as Apollo docking module pilot for the Apollo-Soyuz Test Project in 1975, a joint United States-Soviet Union space flight that culminated in the first and only meeting to date in space of astronauts and cosmonauts.

"The entire NASA family has been saddened to learn of the passing of

Donald K. "Deke" Slayton," said NASA Administrator Daniel Goldin. "As one of the original seven Project Mercury astronauts, he will be remembered as a true pioneer of the Space Age. Deke was an 'American original,' a true national hero, and we will miss him."

During the past week, many in the aerospace community commented about Slayton's leadership in the program.

"To those of us who knew him and worked with him as a NASA astronaut and senior manager, he epitomized integrity, loyalty and courage,"

said JSC Director Aaron Cohen. "America has lost one of its heroes."

Former astronaut and current KSC Director Robert Crippen said Slayton will be remembered for the significant contributions he made to the NASA program.

"He combined courage and daring with engineering competence, strong leadership skills and great regard for the safety of the people he worked with," Crippen said. "He was the one who hired me into the space program and helped guide my career. He was a great leader and a personal friend."

Slayton is survived by his wife, Bobbie, and son, Kent.

Born March 1, 1924, in Sparta, Wis., Slayton was named by NASA as an astronaut in April 1959, and was originally scheduled to pilot the Mercury-Atlas 7 mission, an assignment that was later changed due to a diagnosed heart condition. The mission was subsequently flown by M. Scott Carpenter in May 1962.

Slayton went on to become chief of astronaut activities in September 1962 and was responsible for the operations of the astronaut office. In November 1963, he resigned a com-

mission as an Air Force Major to become Director of Flight Crew Operations for NASA, responsible for directing activities of the astronaut office, aircraft operations office, flight crew integration division, crew training and simulation division, and crew procedures division.

In March 1972, Slayton was restored to full flight status and certified eligible for space flight following a review of his medical status by NASA's director of life sciences and the Federal Aviation Administration. His fellow crew members for Apollo

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## Bluford, M. Brown to leave NASA

Col. Guion S. Bluford, Jr. and Col. Mark N. Brown this week announced their plans to leave NASA in July to pursue other interests.

Besides leaving NASA, Bluford also will retire from the U.S. Air Force to join NYMA, Inc., Gaenbelt, Md., as vice president and general manager of the Engineering Services Division. NYMA provides engineering and software support services to the Federal Aviation Administration, the Justice Department, the Department of Defense and to NASA.

Bluford was among the first group of shuttle-era astronauts selected in 1978. He has served as a mission specialist astronaut on four space

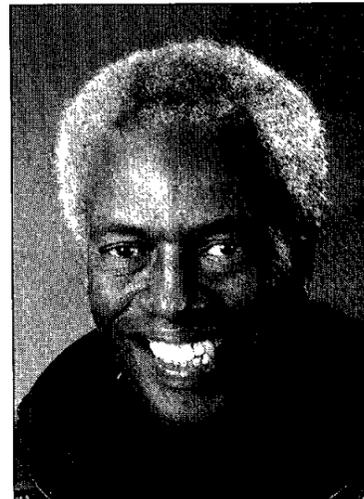
shuttle flights, making history as the first African-American astronaut aboard STS-8 in August 1983. He also flew on STS-61A, the first German D-1 Spacelab mission in October 1985, and two Department of Defense scientific research missions, STS-39 in April 1991 and STS-53 in December 1992. Bluford has logged over 688 hours in space.

"I feel very honored to have served as a NASA astronaut and to have contributed to the success of the space shuttle program," he said. "I will miss working with the people at JSC and the team spirit and *esprit de corps* that comes with flying crew members in space."

In addition to his flight assignments, Bluford has held numerous technical assignments at JSC, including working Space Station Freedom operations, the Remote Manipulator System, Spacelab systems and experiments, space shuttle systems, payload safety issues, and verifying flight software in the Shuttle Avionics Integration Laboratory and in the Flight Systems Laboratory.

"Guy will be missed, but he leaves a legacy that is important to NASA and to the nation," said David C. Leestma, director of Flight Crew Operations. "There are many young people today who have been

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Guion Bluford



Mark Brown

JSC

# Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

EAA Gilruth Dinner Theater "Knock 'Em Dead" (7 p.m. June 26, Gilruth): \$15, limit four per person, includes chicken California dinner.

Splash Town USA — Discount tickets: \$10.50.

Astroworld — Discount tickets: adult, \$18.95; children under 54 inches, \$15.95.

Waterworld — Discount tickets: \$9.95.

Sea World in San Antonio — Discount tickets: adult, \$19.75; child (3-11), \$13.15.

Fiesta Texas, San Antonio — Discount tickets: adult, \$18.35; child (6-11) \$12.75.

Space Center Houston — Discount tickets: adult, \$7.50; child (3-11) \$4.50; commemorative: \$8.75.

Metro tickets — Passes, books and single tickets available.

Movie discounts — General Cinema, \$4.50; AMC Theater, \$3.75; Loews Theater, \$4.

Upcoming events: EAA River Raft Trip.

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# Gilruth Center News

**Sign up policy** — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

**EAA badges** — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday through Friday. Dependents must be between 16 and 23 years old.

**Defensive driving** — Course is offered from 8 a.m.-4:30 p.m. July 17. Cost is \$19.

**Weight Safety** — Required course for employees wishing to use the Gilruth weight room is offered from 8-9:30 p.m. July 1. Pre-registration is required; cost is \$5.

**Aerobics** — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

**Exercise** — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

**Aikido** — Martial arts class meets Tuesdays from 5-7:30 p.m. Cost is \$15 per month.

**Scuba** — Classes meet Tuesdays and Thursdays for four weeks beginning June 17. Cost is \$190, with a \$50 deposit required at registration.

**Golf** — Group lessons will meet Mondays for seven weeks at the Clear Lake Golf Course through July 19. Cost is \$90. Loaner clubs are available for those who need them.

**Softball tournament** — Men's open C tournament will be June 26. Cost is \$95 per team; entry deadline is 7 p.m. June 24.

**Fitness program** — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed exercise program. Call Larry Weir, x30301.

**Volleyball workshop** — A beginner's volleyball workshop will meet from 2-4:45 p.m. Saturdays for eight weeks beginning July 10. Cost is \$25.

**Intercenter Run** — T-shirts are now available to pick-up at the Gilruth.

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# Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

## Property

**Sale/Lease:** Pecan Forest, 3-2-2, swimming pool, avail Aug 1, by appointment only. 332-0047.

**Sale:** Dickinson, 4-2-5-2, pool, FPL, wetbar, 3/4 acre, trees, alarm sys, extras, \$224k. x34354 or 337-1640.

**Sale:** LC, 4-2-2, no approval assumption, lg fenced lot, cul-de-sac, cov deck, \$73.9k. x38843 or 409-925-5011.

**Sale:** Univ Place TH, 2-2-5, garage, FPL, \$74k negotiable. Dave, x38156 or Herb, x38161.

**Lease:** Webster condo, 2-1, new paint, new gray carpet, FPL, all appl, storage, \$495/mo. x31275 or 486-0315.

**Rent:** Hilton Head, SC, vacation condo, pool, tennis, 2-2.5, \$600/wk. 532-1364.

**Rent:** Galv condo, furnished, sleeps 6, Seawall & 61st St, wknd/wkly/daily. Magdi Yassa, 333-4760 or 486-0788.

**Sale:** Camino South, 3-2-2, cul-de-sac, \$79k. x38849 or 286-2658.

**Sale:** Pearland, 5.8 acres, cleared, cross fenced, city water and sewer, approved for horses, \$9k per acre. Lee Ann, 965-2988 or 485-5003.

**Rent:** Arkansas cottage overlooking Blue Mountain Lake, furn, wooded, 4 acres, screened porch, antiques, \$250/wk, \$50/day. x33005 or 538-4141.

**Rent:** Sagemont, 4-2-2, 1/5 story, completely rebuilt, \$675/mo. Minh, 484-2456 or 333-6806.

**Rent:** Lake Travis cabin, private boat dock, CA/H, fully equipped, accommodates 8, wkly/dly, \$425/\$90. 474-4922.

## Cars & Trucks

'84 Celica, 5 spd, 95k mi, ex cond, \$4.2k. Ray, x30643.

'91 Mercury Sable Wagon LS, silver/red cloth, loaded, ex cond, 29K mi, \$10.9k. 488-4188.

'70 VW Bug, custom interior, clean body, ex cond, \$2K. Rick, 334-2036.

'79 Mercedes 300SD turbo, diesel, new paint, gray, new tires, \$6250 OBO. 455-7322.

'89 Honda Accord LX, burgundy, 4 dr, auto, AC, pwr, cruise, 45K mi. Ray, x38030.

'71 Chevy Nova classic, V8, orig owner, \$4.5k. 480-1998.

'89 Mercury Tracer, 4 dr, hatchback, red, loaded, 64K mi, \$3.8K. Neal, 479-8394 or 762-0227.

'85 MR2, 5 spd, sunroof, \$3k. J. Craig, x48116 or 420-2936.

'89 Eagle Premier, 4 dr, V6, loaded, 51K mi, maroon w/gray int, Chrysler 7/70 ext warr, \$6k OBO. Brenda, 488-9641 or 532-1510.

'92 Acura Integra LS, 18K mi, cruise, pwr windows, locks, rear spoiler, rosewood. 922-4014.

'90 Pontiac Grand Prix LE, 2 dr, auto, AC, pwr, AM/FM, 50k mi, \$8.3K. Allison, x37752 or 280-9424.

'77 Datsun B210, 2 dr, good cond, one owner, 96.5K mi, best offer. Andy, 480-2244.

'78 Camaro, good work car, hi miles, AC needs work, \$750. Jim, 326-3718.

'91 Astro Ext Van LT, group load, 25K mi, \$13.5k OBO. Kenneth, x33891 or 488-1114.

'63 Oldsmobile Holiday, 4 dr, hardtop, rare super 88 model, new paint, ex cond, orig '63 Texas title, one owner, spare parts, \$2.9k. 335-1480.

'90 Winnebago Warrior, 22 ft, Class C Ford chassis, 460 CI, generator, AC, awning, ex cond. 538-4249.

'78 VW Rabbit diesel, runs, great mileage, \$1k OBO; long wheelbase over-cab camper top, \$500 OBO. 643-0331.

## Boats & Planes

Boat slip on CL w/roof/motorized boat hoist for pwr boats, \$125/mo. 474-4922.

'81 U.S. Yachts 22' sloop w/4.5 hp engine, hull just cleaned, ex cond, \$4k. Russ, x45979 or 554-5904.

'16 G-Catamaran, trlr and access incl, good cond, \$650 OBO. x30385.

Kneeboard, HO Edge 720, compression molded, thin profile, \$150; skiboard, skurf w/case, \$75. Greg, x31250.

1/2 share of C35 Beech Bonanza, \$6k. x47184 or 992-3827.

115' fiberglass jon boat, trlr, no motor, \$300 OBO. 489-4766.

## Cycles

'88 Hurricane, 19k mi, \$2.7k OBO. x34204 or 480-2954.

'85 Honda Nighthawk CB650, 17K mi, great cond, helmets, windscreen, \$2.1k OBO. x31484 or 280-8563.

## Audiovisual & Computers

IBM XT, 640k, 10 MB, monitor/kybd, sw, 1 disk drive, \$700. 337-4182.

HP-41C peripherals, thermal printer, \$50; card reader, \$30; ex cond. Jeff, 333-7745 or 286-6786.

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# Dates & Data

## Today

**Cafeteria menu** — Special: Italian cutlet. Entrees: chicken a la king, enchiladas with chili, baked lasagna with meat, steamed fish, French dip sandwich. Soup: split pea and ham. Vegetables: Brussels sprouts, oriental vegetables, buttered carrots, lima beans.

## Tuesday

**Blood Drive** — The NASA Blood Drive will continue from 8:30 to 11:30 a.m. June 22 at IFC, 16511 Space Center. For more information, contact Don Martin at 280-3858.

**Cafeteria menu** — Special: stuffed cabbage rolls. Entrees: turkey and dressing, country style steak and hash browns, beef ravioli, baked chicken, French dip sandwich. Soup: tomato Florentine. Vegetables: Italian blend, okra and tomatoes, corn cob-bette, navy beans.

## Wednesday

**NMA meets** — The JSC chapter of the National Management Association will meet at 5 p.m. June 23 at the Gilruth Center. A panel discussion on "Making It into Management at JSC: Views from Senior Managers" will be conducted. For more information call Allison Kruest at x244-7115.

**Toastmasters meet** — The Spaceland Toastmasters Club will meet at 7 a.m. June 23 at the House of Prayer Lutheran Church on the corner of Bay Area Blvd. and Reseda Drive. Call Jim Morrison at 480-9793 for more information.

**Cafeteria menu** — Special: pepper steak. Entrees: liver and onions, catfish and hush puppies, stir-fry pork

with rice, steamed fish, Reuben sandwich. Vegetables: steamed broccoli, yellow squash, macaroni and cheese, vegetable sticks.

## Thursday

**Blood drive** — The next JSC on-site blood drive will be from 8:30-11:30 a.m. and 1-2:30 p.m. June 24 at the Gilruth Center. Employees are encouraged to make appointments. For more information, call Dan Mangieri at x33003.

**AIAA banquet** — The American Institute of Aeronautics and Astronautics' Houston Section annual Awards Banquet will be at 5:30 p.m. June 24 at the Gilruth Center. Cost is \$9 for members, \$10 for nonmembers, \$8 for students. Reservations deadline is noon June 21; call 333-6064, 283-1040, x31350 or 282-3160.

**Cafeteria menu** — Special: chicken fried steak. Entrees: beef tacos, scrod with Hollandaise sauce, steamed fish, French dip sandwich. Soup: navy bean. Vegetables: spinach, cut corn, breaded okra, pinto beans.

## Friday

**Cafeteria menu** — Special: tuna noodle casserole. Entrees: steamed salmon steak, roast beef, baked chicken, steamed fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: French cut green beans, cauliflower with cheese, green peas, black-eyed peas.

## Saturday

**Star party** — The JSC Astronomical Society and Challenger 7 Memorial Park invite the public to

view the summer sky through telescopes provided by the JAS from dusk to 10 p.m. June 26 at the park. For more information, call Bill Williams at 339-1367.

## Monday

**Cafeteria menu** — Special: breaded cutlet. Entrees: baked chicken, beef chop suey, smoked sausage and German potato salad, French dip sandwich. Soup: cream of broccoli. Vegetables: okra and tomatoes, peas, navy beans, baby carrots.

## June 30

**Toastmasters meet** — The Spaceland Toastmasters Club will meet June 30 at 7 a.m. at the House of Prayer Lutheran Church on the corner of Bay Area Blvd. and Reseda Drive. Call Jim Morrison at 480-9793 for more information.

**Astronomy seminar** — The JSC Astronomy Seminar will conduct an open discussion meeting at noon June 30 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

## July 12

**Space Society meets** — The Clear Lake Area Chapter of the National Space Society will meet July 12 at 7 p.m. at the Freeman Memorial Library. For more information, contact Marianne Dyson at 486-4747.

## July 14

**Freedom Fighters meet** — The Space Station Freedom Fighters will meet at noon and 5 p.m. July 14 in Rm. 160 at the McDonnell Douglas Tower. For more information, call David Cochran at 482-7005.

## Miscellaneous

Stamps, US sheet and plate blocks, unused; Limited Edition, signed and numbered lithos and serigraphs by famous artists, good prices. 488-8493.

Saw sharpening equipment, auto filer, auto retoucher, auto setter, hand setter, chain saw sharpener, spinner, chain breaker. Jim x38321 or 334-4272.

Kirby vacuum, \$130; '84 Kirby vacuum in good cond, all access/attachments, motor works great; spare bags. Pete, x40016.

Bassinette w/skirt, \$35; travel swing, \$35; bouncing seat w/toy bar, \$15; bathtub, \$8; front carrier, \$15; sling carrier, \$25. Tina, x39727 or 286-2628.

Karate sparring gear, lg adult size, head, hand, shin, foot protectors, \$40. Jeff, 333-7745 or 286-9636.

Ivory wedding gown w/pearls, sequins, v-neck, chapel length train, sz 6-8, veil, petticoat, \$400. x36696 or 332-9102.

Kids Corvette go-cart, 1 seater, was \$1k, now \$800. x33105 or 554-4387.

Silverware, service for 12, all serving pcs w/Silverchest community brand silverplate. 485-8823.

Medical type lounge chair, used for dialysis treatment. E. Rubenstein, x34807 or 532-2211.

2 one way tickets, Memphis to Hobby, travel June 28, \$75/ea. 532-1364.

Lg bird cage w/fancy wooden stand, ex cond, \$75; parrot stand, \$20. Ann, x46219 or 409-925-6634.

20 gal aquarium w/pump and access, \$40; blk standard size bookcases, \$90; 3 solid brass vanity makeup tbls w/mirror, chair, \$75; oak finished wood frame back chair, \$15. x36186 or x35046.

Wilson whale driver, \$80; Wilson 1200TN irons, \$140; Wilson pro staff bag, \$75; ping 1, 3 & 5 woods, \$225. Ken, 283-9233 or 473-2602.

Wurlitzer fun maker organ w/stool, \$300; various pitchers/bowls, \$50/set; ladies walking shoes, sz 9N, \$50. Jim Poindexter, x38624 or 475-9671.

5 drwr file cabinet; Italian leather briefcase; 183 vol Playboy collection, make offer. x38278 or 334-7258.

Vanguard Palomino hardtop pop up tent trlr, sleeps 4-6, kitchenette w/propane stove, dining tbl, 12V or 110V elect conn, icebox, \$1.5k OBO; couch w/hidden bed, ex cond, \$100 OBO; tv antenna w/25' coax cable, \$25. Ed, x41125 or 481-4889.

One yr old Oceanic fish aquarium w/wood grain trim, 20 gal high, solid oak stand, all accessories, was \$400, now \$200 OBO. x44109.

Sears exercise bicycle, \$25. D. Wood, x37545 or 333-2373.

## Wanted

Want late model small PU w/bad engine, must have standard transmission, small cars will be considered. 520-6048.

Want car pool rider from NW/Bear Creek to JSC/CL area, hours between 7:00 am to 3:45 pm. Racquel, x31810.

Want bicycle child trlr cart, prefer foldup type. x30074 or 470-9994.

Want GM 350 eng, running, reasonable, '82 or later. Dean, x48153 or 488-7032.

Want female roommate, nonsmoker, to share house in Lake Cove, no pets, \$300/mo + 1/2 util + dep. Ann, 282-3790.

## Photographic

Canon EF70-210 mm 1:3.5-4.5 zoom lens, fits and Canon EOS, Rebel or other models. ex cond, 4 years left on warr, \$135. 335-1480.

## Pets & Livestock

AKC reg, male, tiny toy poodle, apricot, stud fee, \$300. Rick, 334-2036.

Persian kittens, good quality, healthy, \$200-\$400, will finance. 326-3704.

Golden retriever, 1 male, 1 female. Jeff, x37388.

Lhasa Apso pups, born 5-7-93, parents on premises, \$75-100. Nancy, x33360 or 338-1040.

## Musical Instruments

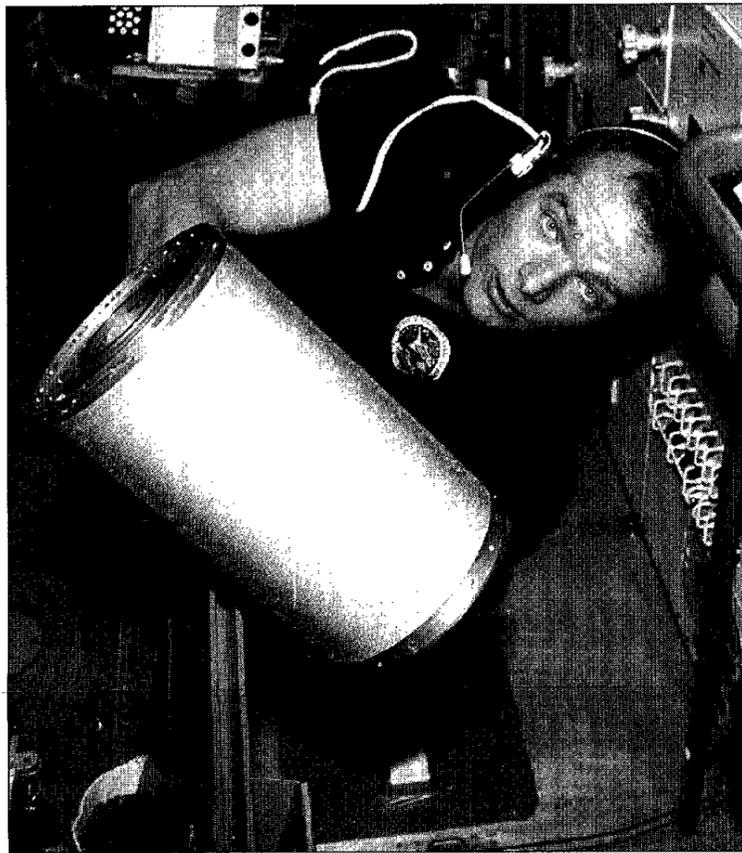
Saxophone and case, appraised and inspected by H&H Music, \$550. Linda, x36246 or 559-1491.

## Household

Four drwr student desk, needs refinishing. \$50; refrig, good cond, \$200. 488-3984.

Kg sz waterbed, semi-motionless, blk leather hdbd, \$400. x36696 or 332-9102.

Maple bunk or twin beds/trundle bed, sofa table, 6x9 new beige carpet, turntable. x38479 or 474-4769.



# International cooperation marks STS-55 mission

Americans, Germans work hand-in-hand on Earth, in orbit

It's been a month since *Columbia* landed, ending the highly successful STS-55 Spacelab D-2 mission, and scientists are just beginning to scratch the surface of the huge amount of data brought back on the 10-day international mission.

Clockwise from above left:

1) The STS-55 crew get together in the Spacelab D-2 science module for its traditional in-flight portrait. In front, from left are Pilot Tom Henricks, Commander Steve Nagel, Payload Specialist Ulrich Walter and Mission Specialist Charlie Precourt. In the rear are Mission Specialist Bernard Harris, Payload Specialist Hans Schlegel and Payload Commander Jerry Ross.

2) Schlegel works with a fungi experiment in the science module.

3) Walter demonstrates the effects of microgravity, stretching out inside the Spacelab module that served as a laboratory for him and his crewmates for 10 days.

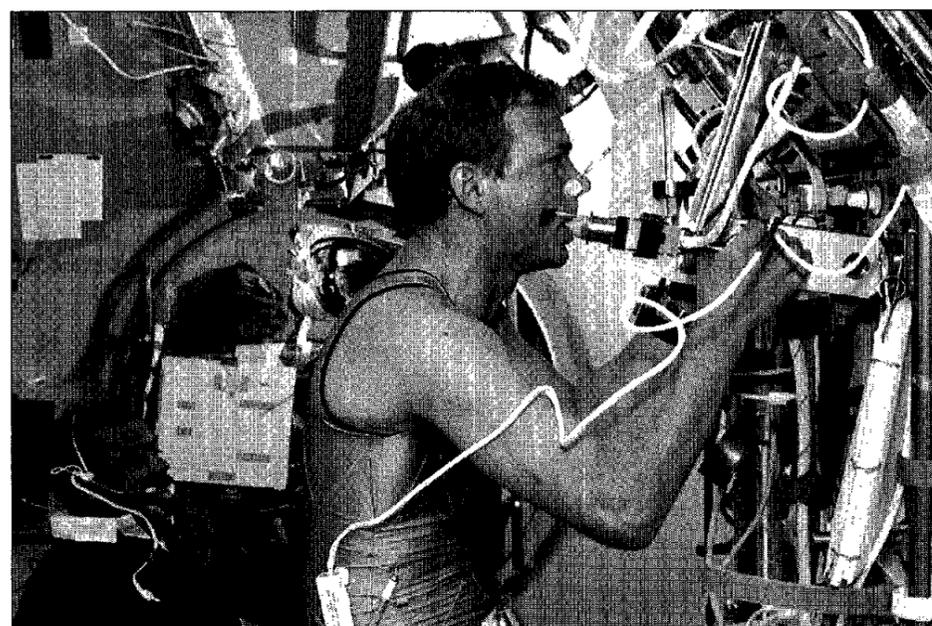
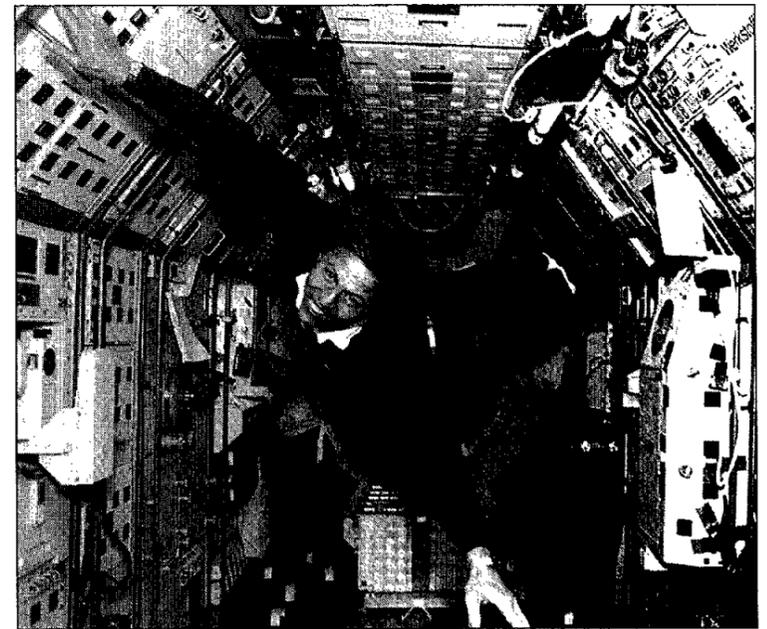
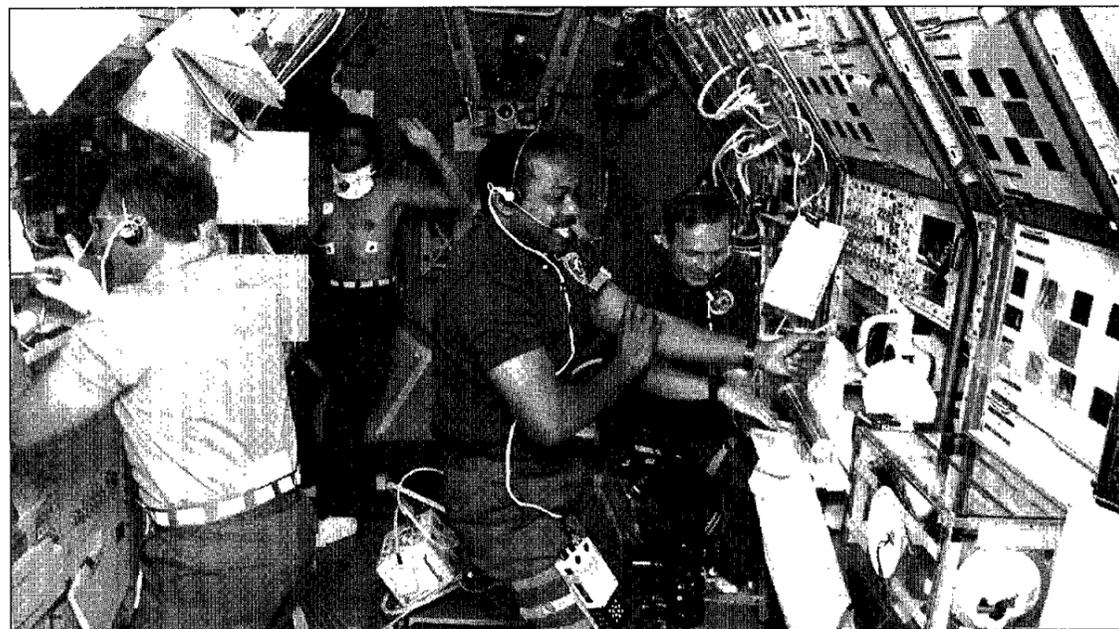
4) Henricks shows a pre-flight crew portrait of the

STS-55 crew on the crew tele-support experiment. The experiment combined an on-board computer-based, multimedia documentation file including text, graphics and photography. It provided real-time graphical communication between the on-orbit crew and the ground.

5) Precourt changes out one of the lithium hydroxide canisters below the middeck level of *Columbia*. The canisters are used to scrub excess carbon dioxide from the cabin air.

6) Four of the seven STS-55 crew members exchange notes during a shift change handover in the Spacelab D-2 science module. From left are Ross, Walter, Harris and Schlegel.

7) Schlegel, in the foreground, participates in the ongoing investigation of human physiology under microgravity conditions as he works out on the ergometer at the Anthracker. Monitoring the run is Harris, a physician. □



# Extreme Ultraviolet Explorer marks first year of discovery

Elements that blanket the light from white dwarf stars, ionized helium in the local interstellar gas, an extreme ultraviolet shadow in the local interstellar medium and new findings on the mysteries of rare extragalactic objects are only some of the highlights of NASA's Extreme Ultraviolet Explorer first year of operation.

EUVE was launched June 7, 1992 to make the first survey of the universe at all the wavelengths contained in the extreme ultraviolet band of the spectrum. It's year of discovery recently was discussed at the 182nd national meeting of the American Astronomical Society at the University of California, Berkeley.

At the conference, astronomers

discussed why hot white dwarf stars emit only small amounts of extreme ultraviolet radiation, despite that their high temperatures should make them produce large amounts of EUV radiation. EUVE data reveal that unexpected elements - mostly iron - may work as a blanket which blocks the EUV radiation and prevent it from escaping into space.

This information promises important new results about the evolution of stars into the white-dwarf stage and may help astronomers calculate the details of how stars age and die, as our the sun will die when it becomes a white dwarf in about 5 billion years, according to the astronomers.

What physical conditions describe

the gas surrounding this solar system? EUVE has allowed astronomers for the first time to observe ionized helium (helium atoms that have lost one of their two electrons) in the gas that floats among the Sun and nearby stars. The EUVE satellite's observations may soon yield far better measurements of the density, temperature and ionization state of this interstellar gas than have been possible until now.

The Deep Survey Telescope on board EUVE has obtained the first direct evidence that the gas and dust drifting among the stars in this galaxy emit a faint glow in the extreme ultraviolet. EUVE observed a "shadow" cast by this gas and dust cloud. The cloud lies in the direction

of the constellation Taurus and is believed to be approximately 200 light-years away. Its location indicates to astronomers that the hot, ionized gas of the local interstellar medium extends much farther than previously thought.

The first sky survey ever conducted in the entire extreme ultraviolet band of the electromagnetic spectrum has revealed that some of the rarest, most exotic objects in the universe—BL Lacertae Objects (BL Lacs)—are surprisingly visible in the extreme ultraviolet. The finding, which will be discussed at this meeting, brings scientists one step closer to puzzling out the mysterious nature of BL Lacs.

BL Lacs are comparatively rare

and are theorized to be centered on massive black holes. By analyzing the extreme ultraviolet light given off by these objects, scientists may learn more about the composition and velocities of matter entering possible black holes.

Active galactic nuclei are another class of rare extragalactic objects to be discussed at this meeting. Many of the AGNs seen in previous surveys either were detected weakly or not observed at all in the extreme ultraviolet. EUVE has revealed that some AGNs are visible in the extreme ultraviolet because their central source of energy is powerful enough to clear a path through the surrounding, otherwise opaque neutral gas.



**CHECKING EQUIPMENT**—STS-58 Payload Commander Rhea Seddon, left, and Mission Specialist David Wolf check some of the many test tubes that will be used for the collection of Spacelab Life Sciences 2 samples during a recent bench review. The September flight is the second mission dedicated to studying human physiology in space.

## Improvement workshop to highlight process identification techniques

"Work Process Identification" will be the focus of a special workshop sponsored by JSC's Process Improvement Subcommittee.

The workshop is set for 8:15 to 11:45 a.m. June 29 in Building 1, Room 966 and will feature a presentation by John H. Bitzer, Director of SR&QA at Martin Marietta Astronautics Group located in Denver, Colo. Bitzer will discuss weighting factors and brainstorming techniques for work process selection and how to prepare for process definition and analysis.

Other presentations include a "hands-on" exercise in which work-

shop participants will have the opportunity to determine products and services, customers, and processes related to their own organization. The exercise will be conducted by Peter Lange of KPMG Peat Marwick.

The schedule also includes an interactive discussion with a panel of individuals who have had experience in work process identification and presentations by Continuous Improvement Teams related to their experiences in identifying work processes.

For more information, please call Ed Pritchard at x34212.

## Fitness intern wins wellness contest

Holly Vera, an intern in the JSC Health-Related Fitness Program, recently won first place for her presentation, "Establishing Future Fitness Goals from Baseline Measurements."

Vera's research developed prediction equations for setting realistic goals on fitness tests to be expected after a period of training. The six tests are percent body fat, one-minute sit-ups, one-minute pushups, sit-and-reach and the 1.5-mile run, all standard measures used in exercise and wellness programs. Research data were taken from records of 1,040 graduates of

the JSC Health-Related Fitness Course.

The presentation resulted from a research project which Vera was required to do as part of her internship for Texas A&M University's exercise science curriculum. She subsequently entered it in a poster contest sponsored by the Texas Chapter of the Association for Worksite Health Promotion.

Her award was an expense-paid trip to the National Meeting of The Association for Worksite Health Promotion who invited her to display her research in New Orleans in the Fall.

## Gate prices increase; discounts stay same

Visitors to Space Center Houston will now see a slight increase in gate prices for the "experience center."

Admission cost will now be \$9.95 for adults and \$5.50 for children.

JSC Employee exchange manager Theresa Sullivan, however, said prices for tickets purchased through the Employee Exchange will not change for the near future.

## Correction

The Thrift Savings Plan briefing is set for 9:30 a.m. July 20 in Bldg. 45, Room 119, not June 20 as was reported in last week's Roundup.

## Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Dates and Data submissions are due Wednesdays, eight working days before the desired date of publication.

Editor ..... Kelly Humphries  
Associate Editor ..... Kari Fluegel

## STS-57 to include EURECA retrieval, spacewalk

(Continued from Page 1)

space; and several Get-Away Special canister experiments, including an Earth photography experiment called CAN-DO built by school students.

After *Endeavour's* launch, shuttle managers may extend the flight from seven days to eight days if projections at the time show that enough electrical power is available for the extra day. With an extra day, *Endeavour* would land at about 7:34 a.m. central June 28.

While *Endeavour* is at the plate, *Discovery* is on deck as NASA prepares to launch two shuttle flights in

fairly quick succession for the second time this year. *Discovery* was planned to leave the processing hangar and move to the Vehicle Assembly Building at KSC late last week to be mated with the solid rockets and fuel tank for STS-51.

*Discovery* will move to Launch Pad 39-B shortly after the pad is vacated by *Endeavour* in preparation for a launch perhaps as early as July 17. STS-51 will carry the Advanced Communications Technology Satellite to orbit as well as the Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer astronomical telescope mounted on a Shuttle

Pallet Satellite.

Elsewhere at KSC, *Columbia* is being readied for a September launch on STS-58, the second Spacelab Life Sciences flight, a mission dedicated to medical studies in weightlessness. *Columbia* is in the bay 2 processing hangar, and work this week included preparations to install the extended duration orbiter pallet, a cluster of extra electricity-generating fuel tanks; installation of the dish-shaped Ku-band antenna used for high-volume communications and television transmissions; and installation of the drag chute.

## Slayton remembered as pioneer, leader

(Continued from Page 1)

Sojuz were Thomas P. Stafford and Vance D. Brand.

In December 1975, Slayton became manager for the Space Shuttle Program's Approach and Landing Test Project. As manager, Slayton directed the project, which included five landings by the test orbiter *Enterprise*, dropped from a carrier airplane to simulate the final 20,000 feet of a shuttle landing. The project checked out the shuttle's flight control systems and evaluated its subsonic flying qualities.

From November 1977 through February 1982, Slayton was manager of the Space Shuttle's Orbital Flight Test Project, directing preparations for and overseeing operations of the first two shuttle missions. His responsibilities included scheduling, mission configuration, mission readiness reviews, postflight mission evaluations and ferry operations with the 747 Shuttle Carrier Aircraft.

Slayton retired from NASA in February 1982. At the time of his death, he served as president of

Space Services, Inc., Houston, and as a consultant to several aerospace corporations, among other positions.

Among the original seven astronauts, Slayton was preceded in death by Virgil I. "Gus" Grissom, killed in an Apollo spacecraft fire on the launch pad Jan. 27, 1967.

Slayton entered the Air Force as an aviation cadet, receiving his wings in April 1943. During World War II, he flew 56 combat missions over Europe as a B-25 pilot. He returned to the U.S. in 1944 and served as a B-25 instructor pilot. In 1945, he was sent to Okinawa and flew seven combat missions over Japan. He later left the Air Force to attend the University of Minnesota, receiving a bachelor of science degree in aeronautical engineering in 1949. In 1951, he was recalled to active duty by the Minnesota Air National Guard, assigned as a maintenance flight test officer of an F-51 squadron in Minneapolis.

After two overseas assignments, Slayton attended the Air Force Test Pilot School in 1955 at Edwards Air

Force Base, Calif. He served as a test pilot at Edwards from January 1956 to April 1959, when he was named an astronaut.

Slayton's honors include the NASA Exceptional Service Medal; two NASA Outstanding Leadership Medals; four NASA Distinguished Service Medals; the Collier Trophy; the SETP Iven C. Kincheloe Award; the General Billy Mitchell Award; the SETP J.H. Doolittle Award for 1972; the National Institute of Social Science's Gold Medal in 1975; the Wright Brothers International Manned Space Flight Award in 1975; the Veterans of Foreign Wars National Space Award in 1976; the Federation Aeronautique Internationale's Yuri Gagarin Gold Medal in 1976; the American Heart Association's Heart of the Year Award in 1976; the American Institute of Aeronautics and Astronautics Special Presidential Citation in 1977; the Houston Area's Federal Business Association's Civil Servant of the Year Award in 1977; and the AIAA Haley Astronautics Award in 1978, among others.

## Patent holders recognized for inventions

(Continued from page 1)

by Wolf and Clarence F. Sams.

Wolf also has been named Outstanding Inventor of the Year by the State Bar of Texas.

Other inventors and inventions were recognized at the luncheon were Richard D. Juday, Two Dimensional Vernier; Michael K. Ewert,

Lunar Radiator Shade; Thomas J. Dunn, Metallic Threaded Composite Fastener; Jon B. Kahn, Pressure Vessel Flex Joint; Jay M. Wright, Quick Application/Release Nut with Engagement Indicator; Leo G. Monford Jr., Payload Retention Device and Electromagnetic Attachment Mechanism; Brian G. Morris,

Method and Apparatus for Providing Real-Time Control of a Gaseous Propellant Rocket Propulsion System; Clarence J. Wesselski and Kornel Nagy, Preloaded Latching Device; Darin N. McKinnis, Fastening Apparatus Having Shape Memory Alloy Actuator; and Rex A. Boyce, Bearing Servicing Tool.

## Two astronauts to retire from NASA corps

(Continued from Page 1)

inspired to pursue careers in science and engineering because of his achievements."

Brown is leaving NASA and retiring from the U.S. Air Force to head up the Space Division office of General Research Corporation in Dayton, Ohio.

The Space Division supports NASA, the Department of Defense, and the commercial sector. As part of his duties in heading the Space Division, Brown also will provide assistance to the co-located Aeronautics Division. GRC is a multi-disciplinary aerospace corporation with offices across the U.S. and in London, England.

"It has been a privilege to work with the folks at NASA as both an engineer and astronaut," he said. "Each day has offered new chal-

lenges, and I have thoroughly enjoyed working with the fine people across the agency."

Brown has worked at JSC since 1980. He was working in the Flight Activities Section of the Mission Operations Directorate when he was selected to become an astronaut in 1984. In December 1985, he was assigned to the crew of a Department of Defense mission which was subsequently canceled because of the *Challenger* accident. During 1986 and 1987, Brown served as an astronaut member of the solid rocket booster redesign team.

Brown served as a mission specialist on two shuttle missions. He flew on STS-28, a Department of Defense mission, in August 1989, and STS-48, the Upper Atmosphere Research Satellite mission, in September 1991. The UARS was

deployed to gather data on the chemistry of Earth's upper atmosphere and to measure solar winds and energy. The crew also conducted numerous secondary experiments ranging from growing protein crystals to studying how fluids and structures react in weightlessness.

Since STS-48 in 1991, Brown served as deputy chief of Flight Crew Operations Directorate's Station-Exploration Office. Most recently Brown has been a member of the space station redesign team working on Option C, providing crew expertise to the planning process.

"Mark has made significant contributions to the shuttle program and to the space station program in addition to his accomplishments as an astronaut," Leestma said. "We'll miss him, and wish him success in his new career."